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NOTICE OF ALLOWANCE AND FEE(S) DUE

23373 7590 19/18/2010

SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

BOKHARI, SYED M

ART UNIT

PAPER NUMBER

2473

DATE MAILED: 10/18/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,544	03/03/2004	Song-yeon Cho	Q79871	3298

TITLE OF INVENTION: SYSTEM AND METHOD OF RELIABLY BROADCASTING DATA PACKET UNDER AD-HOC NETWORK ENVIRONMENT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/18/2011

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE** OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/791,544 03/03/2004

Song-yeon Cho

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nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/18/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
BOKHARI, SYED M	2473	370-328000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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Date _____

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This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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23373	7590	19/18/2010	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			BOKHARI, SYED M	
			ART UNIT	PAPER NUMBER
			2473	

DATE MAILED: 10/18/2010

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 788 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 788 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability**Application No.**

10/791,544

Examiner

SYED BOKHARI

Applicant(s)

CHO ET AL.

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- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 09/15/2010.
2. ☒ The allowed claim(s) is/are 1-28.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Reason for Allowance

1. The following is an examiner's statement of reasons for allowance: Claims 1-28 are allowed.

The present invention is directed to a system for reliably broadcasting a data packet under an ad-hoc network environment including a determining unit for determining whether or not at least one node receiving the broadcast data packet is a relay node, a comparing unit for comparing a first relay node sequence number contained in a management packet which the node transmits with a second relay node sequence number stored in a neighbor table of the node, and a control unit for determining whether or not the data packet is retransmitted to the node according to a result of the comparison of the comparing unit. By comparing the second relay node sequence number stored in the neighbor table of the node which has broadcast the data packet with the first relay node sequence numbers transmitted through a Hello packet, it is possible to check whether or not the data packet is lost during broadcasting, and thus it is possible to reduce a loss factor of the data packet which is generated during broadcasting. Thereby, the data packet can be reliably broadcast.

Regarding claim 1, a system for reliably broadcasting a data packet under an ad-hoc network environment, the system comprising: a comparing unit which compares a first relay node sequence number with a second relay node sequence number, wherein the first relay node sequence number is contained in a management packet, the

management packet is transmitted from a predetermined neighboring node to at least one node which receives the first relay node sequence number received by, wherein the at least one node transmits the data packet to the predetermined neighboring node, wherein the second relay node sequence number is stored in a neighbor table of the at least one node; a memory unit which stores information of the data packet before the data packet is transmitted to the predetermined neighboring node, wherein the information of the data packet comprises the second relay node sequence number; and a control unit which determines whether or not the data packet is retransmitted to the predetermined neighboring node by the at least one node according to a result of the comparison, wherein the comparing is performed in the at least one node transmitting the data packet.

Regarding claim 6, a system for reliably broadcasting a data packet under an ad-hoc network environment, the system comprising: a determining unit which determines whether or not at least one node that receives the data packet is a relay node which transmits the received data packet to other neighboring nodes; a comparing unit which compares a first relay node sequence number with a second relay node sequence number, wherein the first relay node sequence number is contained in a management packet, the management packet is transmitted from a predetermined neighboring node to at least one node which receives the first relay node sequence number, wherein the at least one node transmits the data packet to the predetermined neighboring node, and wherein the second relay node sequence number is stored in a neighbor table of the at least one node that transmits the data packet; a memory unit which stores information

of the data packet before the data packet is transmitted to the predetermined neighboring node, wherein the information of the data packet comprises the second relay node sequence number; and a control unit which determines whether or not the data packet is retransmitted to the predetermined neighboring node by the at least one node that transmits the data packet according to a result of the comparison, wherein the comparing is performed in the at least one node transmitting the data packet.

Regarding claim 11, a method for reliably broadcasting a data packet under an ad-hoc network environment, the method comprising: broadcasting the data packet to neighboring nodes; comparing a first relay node sequence number with a second relay node sequence number, wherein the first relay node sequence number is contained in a management packet received from the neighboring nodes after broadcasting the data packet to neighboring nodes, wherein the second relay node sequence number is stored in a neighbor table of a broadcasting node which broadcast the data packet to the neighboring nodes; storing information of the data packet before the data packet is transmitted to the neighboring nodes, wherein the information of the data packet comprises the second relay node sequence number; and determining whether or not the data packet is retransmitted to the neighboring nodes, by the broadcasting node, according to a result of the comparison, wherein the comparing is performed in the at least one node transmitting the data packet.

Regarding claim 19, a method for reliably broadcasting a data packet under an ad-hoc network environment, the method comprising: checking whether at least one node operable to receive the data packet is a relay node; as a result of checking, when

the node is a relay node, broadcasting the data packet to neighboring nodes by the at least one node; comparing a first relay node sequence number with a second relay node sequence number, wherein the first relay node sequence number is contained in a management packet which each of the neighboring nodes transmits after broadcasting the data packet to neighboring nodes, wherein the second relay node sequence number is stored in a neighbor table of the at least one node, storing information of the data packet before the data packet is transmitted to the neighboring nodes, wherein the information of the data packet comprises the second relay node sequence number; and determining whether or not the data packet is retransmitted to the neighboring nodes, by the at least one node, according to a result of the comparison, wherein the comparing is performed in the at least one node broadcasting the data packet.

The closest prior art Liu et al. (US 7,184,421 B1) discloses a network in which configuration hierarchy information is maintained using flexible mechanisms and methods for establishing routes and transferring information between nodes in ad-hoc data communication networks using on-demand multicast and unicast techniques. Communication nodes use network topology information to build and maintain a dynamically mobile, wireless, ad-hoc network capable of efficiently routing both unicast and multicast traffic. Network nodes that facilitate the collection and distribution of network topology and routing data are dynamically selected, configured, and maintained. Network traffic overhead necessary for maintaining and distributing network routing table information is held to a minimum and efficiently distributed across the

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network, thereby reducing the potential for network traffic bottlenecks due to network overhead processes.

Claims 2-5 and 28, 7-10, 12-18 and 20-27 are allowed since they depend on claim 1, 6, 11 and 19 respectively.

2. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SYED BOKHARI whose telephone number is (571)270-3115. The examiner can normally be reached on Monday through Friday 8:00-17:00 Hrs..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang B. Yao can be reached on (571) 272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Syed Bokhari/
Examiner, Art Unit 2473
9/30/2010

/KWANG B. YAO/
Supervisory Patent Examiner, Art Unit 2473